

I claim:

1. A reverse calculation method, wherein the unmodified output result of multi-channel sources are first found out with unequal power, and the pumping power ratio, the EDF length, the Er^{3+} concentration, or the grating reflectivity is then adjusted one by one to equalize the powers among channels.

2. A power-equalizing multi-channel fiber laser array comprising a pumping laser source, $1 \times N$ variable ratio splitter, a power-equalizing device (which may include N variable optical attenuators or nothing), a plurality of WDM couplers, a plurality of erbium-doped fibers, and a plurality of pairs of fiber gratings, laser light of said pumping source being split by said $1 \times N$ ratio splitter and then coupled to said WDM couplers, each resonance cavity including a pair of fiber gratings and a piece of erbium-doped fiber;

whereby multi-channel light sources can be obtained, and said power-equalizing device or cavity parameters can be used to equalize said multi-channel light sources.

3. The power-equalizing multi-channel fiber laser array as claimed in claim 1, wherein said power-equalizing device consists of a plurality of optical variable attenuators and a $1 \times N$ fixed ratio splitter.

4. The power-equalizing multi-channel fiber laser array as claimed in claim 1, wherein said power-equalization is realized by using a $1 \times N$ variable ratio splitter.

5. The power-equalizing multi-channel fiber laser array as claimed in claim 1, wherein said power-equalization is realized by adjusting the lengths of said

erbium-doped fiber in individual resonance cavity.

6. The power-equalizing multi-channel fiber laser array as claimed in claim 1, wherein said power-equalization is realized by adjusting the concentration of Er^{3+} in the erbium-doped fiber.

5 7. The power-equalizing multi-channel fiber laser array as claimed in claim 1, wherein said power-equalization is realized by adjusting the reflectivity of said grating reflectors.

8. The power-equalizing multi-channel fiber laser array as claimed in claim 1, wherein the wavelength of said pumping laser source is 980 nm.

10 9. The power-equalizing multi-channel fiber laser array as claimed in claim 1, wherein the wavelength of said pumping laser source is 1480 nm.